



Listed Waterbody: Santa Maria and Oso Flaco Waterbodies

Listed Condition: Nitrate

Progress Report: Data Collection

This report describes fiscal year 2005-2006 (FY 05-06) project status for the Santa Maria River, Main Street Canal, Orcutt-Solomon Creek, Oso Flaco Creek and Oso Flaco Lake. This report includes information and data evaluated to date (discussed below) and further analyses planned in upcoming months. A Data Analysis Report is due in May 2006.

Problem Definition and Data Analysis – in progress

The California Regional Water Board (Water Board) is responsible for protecting water resources from pollution and nuisance that may occur as a result of waste discharges. The Water Board determines beneficial uses in the Water Quality Control Plan (Basin Plan) that need protection. The Water Board adopted water quality objectives for protection of beneficial water uses in the Basin Plan.

Beneficial Uses

The Santa Maria River, Orcutt Creek, Oso Flaco Lake and Oso Flaco Creek have designated beneficial uses in the Basin Plan. The beneficial uses cited in the Basin Plan are listed in Table 1. Staff interpreted Orcutt Creek as being synonymous with Orcutt-Soloman Creek.

The Basin Plan states that surface waterbodies within the Region that do not have beneficial uses designated for them are assigned the beneficial uses of “municipal and domestic water supply” and “protection of both recreation and aquatic life.” Staff interpreted this general statement of beneficial uses to encompass the specific beneficial uses of water contact and non-contact recreation, municipal and domestic supply, and warm fresh water habitat. Main Street Canal is not specifically listed in the Basin Plan and therefore is designated with those beneficial uses.

Oso Flaco Lake is not designated as supporting the municipal and domestic supply beneficial use. As such, staff proposed that Oso Flaco Lake be removed from the 303(d) list of impaired waterbodies (for nitrate) as part of the 2006 list update (in progress).

Table 1. Beneficial uses for Santa Maria River and listed waterbodies and Oso Flaco Creek.

Waterbody	Santa Maria River	Orcutt Creek	Oso Flaco Creek	Oso Flaco Lake
Municipal and Domestic Supply (MUN).	X	X	X	
Agricultural Supply (AGR)	X	X	X	
Industrial Process Supply (PROC)				
Industrial Service Supply (IND)	X			
Ground Water Recharge (GWR)	X	X	X	X
Water Contact Recreation (REC-1)	X	X	X	X
Non-Contact Water Recreation (REC-2)	X	X	X	X

Wildlife Habitat (WILD)	X	X	X	X
Cold Fresh Water Habitat (COLD)	X	X		
Warm Fresh Water Habitat (WARM)	X		X	X
Migration of Aquatic Organisms (MIGR)	X			
Spawning, Reproduction, and/or Early Development (SPWN)				X
Preservation of Biological Habitats of Special Significance (BIOL)			X	X
Rare, Threatened, or Endangered Species (RARE)	X	X	X	X
Estuarine Habitat (EST)		X		
Freshwater Replenishment (FRSH)	X	X	X	
Navigation (NAV)				X
Hydropower Generation (POW)				
Commercial and Sport Fishing (COMM)	X	X	X	X
Aquaculture (AQUA)				
Inland Saline Water Habitat (SAL)				
Shellfish Harvesting (SHELL)				

Water Quality Data

In December 2005 and January 2006, staff obtained existing groundwater and surface water quality data and studies, and land use information from numerous agencies and programs. These efforts are discussed in the following sections. Staff is also evaluating the need to collect additional data to develop the TMDLs. In addition to the existing and proposed analyses presented below, staff will also evaluate the following information in upcoming months and include it in the Data Analysis Report:

- Santa Maria Estuary Enhancement and Management Plan,
- Potential surface water runoff from golf courses,
- Surface and groundwater data collected by the landfill and wastewater treatment plants,
- Additional surface and groundwater nitrate data (e.g. Santa Maria Basin Oil Field Assessment, Nipomo Oil Refinery),
- Status of efforts by the Coastal San Luis RCD to develop a nitrate budget for Oso Flaco Lake.

Additional Water Board Monitoring

Staff is currently evaluating the need to collect additional data to develop the TMDLs. In the Project Plan (2004), staff recommended additional nitrate and flow data be collected in order to quantify sources, allocate loads, and identify appropriate implementation actions. Many of the sites have been sampled by other agencies including the City of Santa Maria and the Cachuma Resources Conservation District, and it appears that the existing data will meet the initial objectives of the proposed monitoring. Staff concludes that sampling of Correlitos Creek, an unimpaired tributary to Orcutt-Solomon Creek, to obtain background nitrate levels is unnecessary, as the numeric target will be consistent with the nitrate WQO for municipal and domestic water supply. As such, staff will probably rely on existing data to develop the TMDLs. If additional data (e.g. runoff, groundwater) is collected, staff will include the results in the Data Analysis Report.

Central Coast Ambient Monitoring Program

The Water Board's Central Coast Ambient Monitoring Program (CCAMP) conducted monthly monitoring in 2000 and 2001. Monthly water quality monitoring continued at the Santa Maria River sites at Rancho Guadalupe Dunes Preserve through August 2003. Table 2 shows the names of the sampling sites. Figure 1 shows the mean and range of data collected at each site in the Santa Maria hydrologic unit area. Sites are displayed in order of decreasing mean.

Water Board staff utilized water quality data collected by CCAMP to determine where water quality objectives were exceeded. Staff determined the Santa Maria River, Main Street Canal, Orcutt-Solomon Creek, and Oso Flaco Creek exceeded the municipal and domestic water supply (MUN) water quality objective for nitrate. Staff will evaluate spatial representation of data, if percent objectives are exceeded, and seasonal variability in upcoming months.

Table 2. CCAMP monitoring locations in the Santa Maria and Oso Flaco watersheds

Waterbody	site name	site location
Alamo Creek	312ALA	312ALA-Alamo Creek at Alamo Creek Road
Blosser Channel	312BCD	312BCD-Blosser Channel d/s of groundwater recharge ponds
Bradley Canyon Creek	312BCF	312BCF-Bradley Canyon diversion channel @ Foxen Canyon Road
Bradley Channel	312BCU	312BCU-Bradley Channel u/s of ponds @ Magellan Drive
LaBrea Creek	312BRE	312BRE-LaBrea Creek u/s Sisquoc River
Cuyama River(above res.)	312CAV	312CAV-Cuyama River @ Highway 33
Cuyama River(above res.)	312CCC	312CCC-Cuyama River d/s Cottonwood Canyon
Cuyama River(above res.)	312CUL	312CUL-Cuyama River above Lockwood turnoff
Cuyama River(below res.)	312CUT	312CUT-Cuyama River below Twitchell @ White Rock Lane
Cuyama River(above res.)	312CUY	312CUY-Cuyama River d/s Buckhorn Road
Huasna River	312HUA	312HUA-Husana River @ Huasna Townsite Road
Main Street Canal	312MSD	312MSD-Main Street Canal u/s Ray Road @ Highway 166
Nipomo Creek	312NIP	312NIP-Nipomo Creek @ Highway 166
Nipomo Creek	312NIT	312NIT-Nipomo Creek @ Tefft Street
Oso Flaco Creek	312OFC	312OFC-Oso Flaco Creek @ Oso Flaco Lake Road
Oso Flaco Lake	312OFL	312OFL-Oso Flaco Lake @ culvert
Little Oso Flaco Creek	312OFN	312OFN-Little Oso Flaco Creek
Betteravia Lakes	312OLA	312OLA-Betteravia Lakes at Black Road
Orcutt Solomon Creek	312ORB	312ORB-Orcutt Solomon Creek @ Black Road
Orcutt Solomon Creek	312ORC	312ORC-Orcutt Solomon Creek u/s Santa Maria River
Orcutt Solomon Creek	312ORI	312ORI-Orcutt Solomon Creek @ Highway 1
Salisbury Creek	312SAL	312SAL-Salisbury Creek @ Branch Canyon Wash
Santa Maria River	312SBC	312SBC-Santa Maria River @ Bull Canyon Road
Sisquoc River	312SIS	312SIS-Sisquoc River @ Santa Maria Way
Sisquoc River	312SIV	312SIV-Sisquoc River u/s Tepusquet Road
Santa Maria River	312SMA	312SMA-Santa Maria River @ Rancho Guadalupe Dunes Preserve
Santa Maria River	312SMI	312SMI-Santa Maria River @ Highway 1

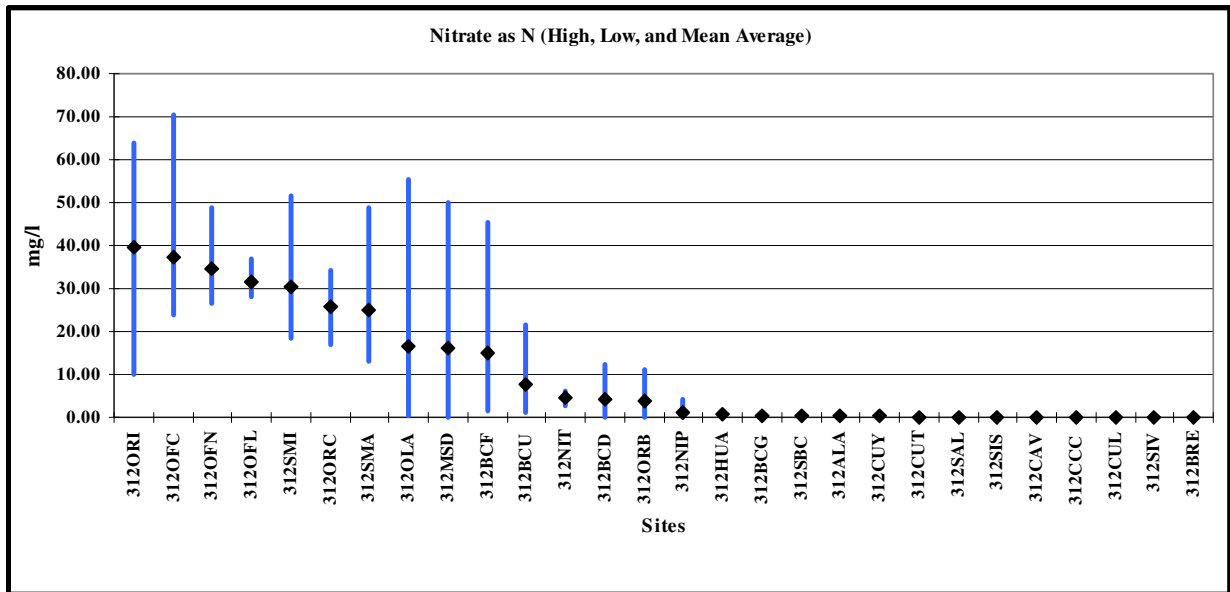


Figure 1. CCAMP monitoring data in the Santa Maria and Oso Flaco watersheds.

Agricultural Drainage Data in the Oso Flaco Watershed

The Cachuma Resources Conservation District (RCD) collected nitrate data in 2002-2003 at eight locations within the Oso Flaco watershed. Data are shown in Table 3. Water Board staff will obtain site descriptions from the RCD and summarize the data in upcoming months.

Table 3. Nitrate-nitrogen values from agricultural drainage sites in Oso Flaco Creek watershed.

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
	Urban	Bonita/ Divisi.	Division/ Culvert	Highway 1/ OFLRd	RR/OFLRd	Crk/OFLR	LOFC/RR	OFL/ Causeway
06/12/02	2	113	154	77	43	41	18	51
07/10/02	2	96	89	9	12	50	44	38
07/24/02	ns	13	12	25	ns	47	42	37
08/06/02	3	80	34	40	20	25	32	30
08/20/02	ns	120	99	34	ns	36	29	29
09/11/02	ns	63	47	21	38	36	35	32
10/09/02	ns	76	66	44	19	51	41	34
11/13/02	ns	ns	ns	111	56	65	53	40
12/10/02	ns	72	102	10	17	31	38	41
01/15/03	ns	85	101	50	37	65	41	40
02/20/03	ns	ns	ns	ns	ns	34	43	38
03/11/03	ns	61	108	34	15	29	38	29
04/29/03	ns	65	ns	ns	ns	29	38	29
05/29/03	ns	89	95	11	20	41	47	50
06/30/03	ns	137	ns	86	40	65	76	52
Average	2	82	82	42	29	43	41	38

City of Santa Maria storm event monitoring

The City of Santa Maria began collecting data during the wet season 2004-05 as part of their storm water discharge monitoring requirements. The City plans to continue storm water monitoring efforts indefinitely, with a minimum of three sampling events per wet season. Additional sampling will provide information to characterize urban and agricultural inputs. Table 4 shows a summary of nitrate concentrations. Water Board staff will meet with City staff in upcoming months to determine the Main Street Canal drainage area and identify possible additional monitoring sites in order to better isolate urban sources or verify levels lower than other sources or reaches.

Table 4. Summary of nitrate-nitrogen concentrations within the City of Santa Maria

Station	Drainage area primary land uses	n	Min. (mg/L)	Average (mg/L)	Max. (mg/L)
Prell Basin	Primarily runoff from irrigated agriculture; representative of flows which enter the City.	2	3.0	3.4	3.7
Hobbs Basin	Urban run off; representative of urban flows leaving the City	2	0.8	1.3	1.8
Main St. Canal	Two channels that discharge to the Santa Maria River; representative of urban and agriculture	3	1.0	3.7	5.9

Orcutt-Solomon Creek storm event monitoring

Santa Barbara County's Project Clean Water sponsors studies to help identify pollution sources and develop an understanding of how those pollutants move through the environment. Project Clean Water conducted nitrate monitoring in Orcutt-Solomon Creek during four storm events between January 2001 and April 2001 at monitoring site, OR1. Of four samples collected, three had non-detectable levels of nitrate, and one sample measured 0.7 mg/L nitrate (as nitrogen). Water Board staff will contact Santa Barbara County staff to obtain additional data (e.g. from site OR1 and ORB) collected since 2001.

Oso Flaco Nitrate Study

The Coastal Conservancy contracted with The Dunes Center to conduct a Oso Flaco Watershed Nitrate and Sediment Assessment. Objectives of the study included developing a nitrate model. Staff will review results of this study in upcoming months and include the findings in the Data Analysis Report.

Santa Maria Valley Groundwater Basin

The Santa Maria Valley groundwater basin extends south from the Nipomo Mesa to the Orcutt Uplands. The communities of Santa Maria, Nipomo, Guadalupe, Oceano, Grover Beach, Pismo Beach, Arroyo Grande and Orcutt are located in this basin (DWR, 2003). Groundwater is used for municipal and domestic water, industrial and agricultural supply. Table 3-3 of the Central Coast Region Basin Plan has an agricultural nitrate (as nitrogen) groundwater objective of less than 5 mg/l for sensitive crops.

In July 1995, Water Board staff prepared a report documenting nitrate contamination of groundwater. The report included an assessment of specific groundwater basins in the Central Coast Region and concluded that the Santa Maria Valley groundwater basin had significant nitrate contamination. Staff recommended that a groundwater nitrate management plan be developed as a result of the study's findings.

Staff will evaluate study results and available groundwater data further in upcoming months and include the findings in the Data Analysis Report.

Land Use Data

Staff evaluated spatial data for delineation of watershed boundaries; compilation of land use tables; preparation of orientation maps, and presentation of hydrologic and transportation networks. Staff used multiple USGS 30-meter Digital Elevation Models to determine sub-watershed boundaries for the listed waterbodies. Staff aggregated Multi-resolution Land Characterization (MRLC) land use classifications into land use categories. The categories included the following: agricultural, urban, and open space (including rangeland). Table 5 displays land uses by main watersheds and subwatersheds, including listed waterbodies. Staff is currently seeking information to separate Main Street Canal from Blosser and Bradley Channels.

Table 5. Land uses in subwatersheds in the Santa Maria and Oso Flaco watersheds.

Subwatershed	Agricultural	Urban	Open Space	TOTAL AREA
Oso Flaco Creek*	5,980	228	2,843	9,051
	66%	3%	31%	100%
Alamo Creek	382	2	57,413	57,796
	1%	0%	99%	100%
Nipomo Creek	9,369	688	4,444	14,501
	65%	5%	31%	100%
Santa Maria River	19,785	1,253	24,433	45,470
	44%	3%	54%	100%
Cuyama	36,042	1,155	636,190	673,386
	5%	0%	94%	100%
Sisquoc	7,825	763	293,219	301,807
	3%	0%	97%	100%
Channels (Blosser, Bradley, and Main)	3,377	4,692	1,267	9,336
	36%	50%	14%	100%
Bradley Canyon Creek	4,402	365	6,248	11,015
	40%	3%	57%	100%
Orcutt-Solomon Creek	20,980	5,576	31,013	57,569

	36%	10%	54%	100%
Santa Maria River Mouth	4	2	1,160	1,165
	0%	0%	100%	100%
Total	108,147	14,723	1,058,231	1,181,101
	9%	1%	90%	100%

* includes estimated area draining Nipomo Mesa through storm-drain conveyance system.

Source Analysis – in progress

Staff calculated nitrate loading based on export coefficients developed by SCWRP and land use information for each subwatershed (shown previously). The export coefficients are shown in Table 6 and preliminary loading rates are shown in Table 7. Staff will determine the subwatersheds that are contributing excessive levels of nitrate in upcoming months.

Table 6. Export coefficients used to calculate land use loading rates within the Santa Maria and Oso Flaco watersheds.

Land Use	(lbs TN/ac/yr)
Agriculture	15.5
Open Space	1.44
Urban	5.52

Table 7. Preliminary nitrate-nitrogen load from subwatersheds in the Santa Maria and Oso Flaco watersheds.

Subwatershed	Agricultural	Urban	Open Space	TOTAL AREA
Oso Flaco Creek*	92,687	1,256	4,094	98,037
	95%	1%	4%	100%
Alamo Creek	5,915	9	82,675	88,599
	7%	0%	93%	100%
Nipomo Creek	145,220	3,797	6,399	155,416
	93%	2%	4%	100%
Santa Maria River	306,660	6,914	35,183	348,757

	88%	2%	10%	100%
Cuyama	558,645	6,374	916,113	1,481,132
	38%	0%	62%	100%
Sisquoc	121,283	4,213	422,235	547,732
	22%	1%	77%	100%
Channels (Blosser, Bradley, and Main)	52,351	25,899	1,824	80,075
	65%	32%	2%	100%
Bradley Canyon Creek	68,225	2,016	8,997	79,238
	86%	3%	11%	100%
Orcutt-Solomon Creek	325,190	30,780	44,659	400,629
	81%	8%	11%	100%
Santa Maria River Mouth	59	11	1,670	1,739
	3%	1%	96%	100%
Total	1,676,240	81,270	1,523,853	3,281,363
	51%	2%	46%	100%

Selection of Numeric Target –

The water quality objective that applies to this TMDL is the municipal beneficial use. The municipal drinking water supply beneficial use is protected by the numeric water quality objective of 10 mg/l-N maximum for nitrate. The numeric target for the listed waterbodies will be consistent with this value.

Target Linkages- not yet developed

Loads and Allocations – not yet developed

Implementation and Monitoring Plan – not yet developed

Public Outreach and Participation –

Staff anticipates a low-medium to medium level of stakeholder involvement in the development of the nitrate TMDLs. Staff based this determination on the fact that there are few competing interests; committed, formal stakeholder groups; local implementation and monitoring; and adequate time in the schedule. Opportunities for interested parties to be involved include: providing data and other

information to staff, and providing review and comment on the Preliminary Project Report, Project Report, and Regulatory Action Plan (i.e. Basin Plan Amendments).

On September 30, 2004, Staff provided an update of the TMDLs to the Farm Water Quality Short Course. Staff will be notifying lead stakeholders in upcoming months to communicate project initiation, expectations, gain any additional relevant information; and answer any questions.

Planned Timeline –

A Data Analysis Report is due in May 2006. At this time, the planned timeframe for completion of the TMDL with Implementation Plan that meets State requirements is December 2008.

Questions about this project, its progress, conclusions presented in this Progress Report, or anticipated future work planned or scheduled for this project should be addressed to Katie McNeill at the Regional Board. Katie McNeill may be contacted by telephone at: (805)549-3336, or by e-mail at: kmcneill@waterboards.ca.gov.

S:\TMDLs & Watershed Assessment\TMDL and Related Projects- Region 3\Santa Maria and Oso Flaco\Nitrate\0 Work In Progress\Items for Senior Review\SMOFNitrPrgrsRptJan2006Del Final.doc